Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of the claims:

1. (currently amended) A magnetic memory cell comprising:

a first line;

a sense layer in electrical communication with the first line; and

a reference layer line configured to carry a sense current received from the sense layer, wherein the sense current flows from the first line through the sense layer and away from the memory cell via the reference layer to determine a resistive state of the memory cell.

2. (original) The magnetic memory cell of claim 1, further comprising a barrier layer, where the reference layer line is coupled to the sense layer through the barrier layer.

3. (currently amended) The magnetic memory cell of claim 1, wherein the reference layer functions as a sense conductor to bring a word line closer in proximity to the sense layer~~sense current flows to the memory cell via the first line and away from the memory cell via the reference layer line~~.

4. (original) The magnetic memory cell of claim 1, wherein the reference layer line is coupled to the sense layer of more than one memory cell.

5. (original) The magnetic memory cell of claim 1, wherein the sense layer has an alterable magnetic orientation and the reference layer has a pinned magnetic orientation.

6. (original) The magnetic memory cell of claim 1, wherein the reference layer line includes a ferromagnetic film.

7. (original) The magnetic memory cell of claim 6, wherein the ferromagnetic film is selected from the group consisting of NiFe and CoFe.

8. (original) The magnetic memory cell of claim 6, wherein the ferromagnetic film is adjacent an anti-ferromagnetic material.

9. (original) The magnetic memory cell of claim 8, wherein the anti-ferromagnetic material is selected from the group consisting of IrMn, PtMn, CrPtMn and NiMn.

10. (original) The magnetic memory cell of claim 1, wherein the reference layer line comprises at least two layers of ferromagnetic material, each pair of ferromagnetic layers separated by a layer of non-magnetic material.

11. (original) The magnetic memory cell of claim 10, wherein at least one layer of ferromagnetic material is adjacent an anti-ferromagnetic material.

12. (original) The magnetic memory cell of claim 10, wherein the layer of non-magnetic material includes material selected from the group consisting of Ru, Re, Os, Cu and Cr.

13. (original) The magnetic memory cell of claim 1, wherein the reference layer line includes a thin seed layer selected from the group consisting of Ta, Ru, Ta/Ru and Ta/NiFe.

14. (original) The magnetic memory cell of claim 13, wherein the preferred thickness range for the seed layer is 1-10 nm.

15. (original) The magnetic memory cell of claim 1, further comprising a second line insulated from the reference layer line.

16. (original) The magnetic memory cell of claim 15, wherein the first line and the second line are substantially orthogonal to one another.

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17. (original) The magnetic memory cell of claim 15, further comprising a third line insulated from the first line, wherein the third line and the second line are substantially orthogonal to one another.

18. (currently amended) A magnetic memory device comprising:

an array of magnetic memory cells;

first lines crossing the array of magnetic memory cells; and

reference layer lines crossing at least one magnetic memory cell in the array of magnetic memory cells wherein the reference layer lines are configured to carry a sense current; and

a read circuit coupled to one of the reference layer lines to provide the sense current through one of the first lines, through a sense layer, and propagated out of a magnetic memory cell through the one of the reference layer lines to determine a magnetic orientation of the magnetic memory cell.

19. (original) The magnetic memory device of claim 18, wherein one reference layer line is coupled to two magnetic memory cells.

20. (original) The magnetic memory device of claim 18, further comprising second lines crossing the array of magnetic memory cells and insulated from the reference layer lines.

21. (original) The magnetic memory device of claim 20, further comprising third lines crossing the array of magnetic memory cells and insulated from the first lines, wherein the third lines and the second lines are substantially orthogonal to one another.

22. (original) A magnetic memory cell comprising:

a first line;

a sense layer in electrical communication with the first line;

a barrier layer;

a reference layer line coupled to the sense layer by the barrier layer;

a second line;

an isolation layer between the second line and the reference layer line;

a third line; and

a second isolation layer between the third line and the first line.

23. (original) The magnetic memory cell of claim 22, further comprising a read circuit electrically coupled to the first line and the reference layer line.

24. – 26. (canceled)